

SiLix-C Nanocomposites for High Energy Density Li-ion Battery Anodes, Phase II

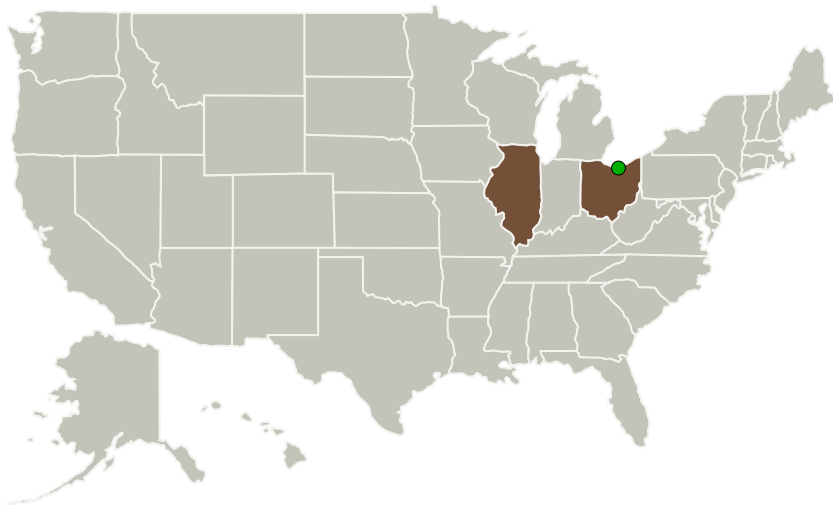
Completed Technology Project (2010 - 2012)



Project Introduction

For this project Superior Graphite Co. (Chicago, IL, USA), the leading worldwide industrial carbon manufacturer and the only large scale battery grade graphitic carbon producer in the USA, will develop, explore the properties of, and demonstrate the enhanced capabilities of novel nanostructured SiLix-C anodes, capable of retaining high capacity at a rapid 2 hour discharge rate and at 0oC when used in Li-ion batteries. By the end of Phase I we have demonstrated advanced anode materials with the specific capacity in excess of 1000 mAh/g, minimal irreversible capacity losses and stable performance for 20 cycles at C/1. We are confident that by the developing and applying a variety of novel nano-materials technologies, fine-tuning the properties of composite particles at the nanoscale, optimizing the composition of the anodes, and choosing appropriate binder and electrolytes we will be able to revolutionize Li-ion battery technology. In order to achieve such a breakthrough in power characteristics of Li-ion batteries, the team will develop new nanostructured SiLix-C anode materials to offer up to 1200 mAh/g at C/2 at 0oC and a long cycle life with less than 20% fading when cycled for 2000 cycles at C/2 at 0oC

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Superior Graphite Co.	Lead Organization	Industry	Chicago, Illinois
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Illinois	Ohio

Project Transitions

July 2010: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139450>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Superior Graphite Co.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

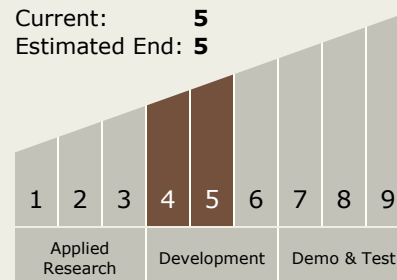
Carlos Torrez

Principal Investigator:

Francois Henry

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.2 Energy Storage
 - └ TX03.2.1 Electrochemical: Batteries

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System